

## TRANSPARENT MOUNTS FOR FIELD HERBARIA

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In describing a method of mounting plant specimens with transparent cellophane tape on index cards, Pierce<sup>1</sup> suggested that under some conditions transparent mount sheets might prove superior to the cards. The following is a summary of personal experience with a modification of Pierce's method. Developed primarily to make diseased tree leaves available for reference and demonstration in field work, the procedure has also been tried out with a number of other kinds of specimens.

A transparent mount is ideal for samples of virosis mottlings, details of which can be seen better by transmitted than by reflected light; also when it is desirable that both sides of a specimen should be visible. For thick material the transparent sheet provides a smooth surface through which the specimen can be seen to excellent advantage. In my work I have used two kinds of transparent mounts. In one the specimen is placed between two layers of "Scotch cellulose tape" in windows cut in small cards. The other, which is less laborious and which results in a better specimen, involves the use of a transparent mounting sheet. While there are doubtless a number of substances which would be suitable for this, I have experimented only with "Plastacele," a cellulose acetate product, using the 0.010-inch thickness, which is about the weight of postal card stock.

The specimens are mounted soon after collection, sometimes at once, and usually within eighteen hours. If mounting is delayed for longer periods there is risk that they will become shrivelled, brittle, or discolored. When held for a few hours, they are placed in newspaper folders made up into small bundles with stiffening cards (about four by six inches) and held together with stout rubber bands. The leaves in the folders should be separated to avoid discoloration and blotters should be placed between the specimen folders.

When practicable, collection of especially turgid samples should be avoided; any superficial water should be gently blotted off before mounting. With delicate tissues, handling should be reduced to a minimum to prevent bruising. Forceps can often be used to advantage. For displaying flower petals (pear or cherry, for instance), the thickness of the preparation may be reduced by cutting off the ovary before mounting and using a longitudinal section through a nearly open bud to show ovary, pistils, stamens, ovules, and pollen.

In using cards with windows, the first layer of tape is applied with the card face down against a smooth surface such as glass or painted wood. On plastacele, the tape is ordinarily put on

<sup>1</sup> Pierce, W. Dwight. Retention of plant colors, *Science* 84: 253-254. 1936.

what is to be the back of the mount so that the more significant facies of the specimen will be against a smooth surface. It is important to seal the mount tightly while still avoiding crushing the tissues.

The mounted specimens are dried between blotters for about a week, the packs of mounts and blotters being held together with rubber bands with no additional pressure. Except in very dry weather it is best to change blotters every day or two.

The specimens are kept on four by six inch sheets in fascicles not more than an inch in thickness with pressboard covers, fastened together with two looseleaf rings and tied with tape tabs. Descriptive notations are made on cards hinged to the mount sheets.

The following observations, made in May, 1939, will give an indication of the permanence reasonably to be expected of these preparations, a question of paramount interest to the field worker. The 1937 specimens were mounted between two layers of tape, while in 1938 and 1939 plastacele mount sheets were used.

Specimens of mosaic-mottled leaves include almond, apricot, myrobalan plum, peach, plum, and prune, varying in age from ten to nineteen months. Although the mosaic patterns are still plainly visible on the 1937 leaves, some of the specimens have suffered a slight color change, the green having taken on a yellowish-brown cast, possibly the result of accidental exposure to strong sunlight. The color change in the 1938 specimens is negligible.

Among other satisfactory preparations are: western celery mosaic (2 months); powdery mildew on peach (10 months); sugar beet curly top, sugar beet mosaic, fig mosaic and tulip petal breaking (12 months); downy mildew on alfalfa (13 months); tomato with mild tobacco mosaic (14 months); and powdery mildew on barley (15 months). A set of young seedlings of lettuce, onion, tomato, and beet, mounted within an hour of gathering, are still in good condition after fifteen months, though the green is becoming somewhat pale, and the characteristic red markings of the beet are gone. Lichens (*Cetraria*, *Cladonia*, *Parmelia*, *Usnea*), rusts, and alfalfa leaf spot show no significant change a year or more after mounting.

In spite of the seemingly casual method of drying these specimens, there has been practically no trouble with molding, presumably because of the exclusion of air by the rubber cement of the tape. The collections have furthermore been wholly free of herbarium insects, though as field specimens they have not, needless to say, been stored in insect-proof containers nor treated with any repellent aside from the tape itself.

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